

# Authors' affiliations

S Sridharan, G Derrick, J Deanfield\*, A M Taylor\*, Cardiothoracic Unit, Great Ormond Street Hospital for Children, London, UK

\*Also UCL Institute of Child Health, London, UK

# REFERENCES

- 1 Moore P, Lock JE. Catheter intervention: balloon angioplasty: experimental studies, technology and methodology. In: Lock JE, Keane JF, Perry SB, eds. *Diagnostic and interventional catheterization in congenital heart disease*. Boston: Kluwer Academic, 2001:119–49.
- 2 Royal College of Radiologists. *Making the best use of a department of clinical radiology: guidelines for doctors*, 5th ed. London: Royal College of Radiologists, 2003.
- 3 Murthurangu V, Razavi R, Bogaert J, et al. Congenital heart disease. In: Bogaert J, Dymarkowski S, Taylor AM, eds. *Clinical cardiac MRI*. Heidelberg: Springer, 2005:439–73.
- 4 Canter CE, Gutierrez FR, Mirowitz SA, et al. Evaluation of pulmonary arterial morphology in cyanotic congenital heart disease by magnetic resonance imaging. *Am Heart J* 1989;118:347–54.
- 5 Kondo C, Caputo GR, Semelka R, et al. Right and left ventricular stroke volume measurements with velocity encoded cine NMR imaging: in vivo and in vitro evaluation. *AJR Am J Roentgenol* 1991;157:9–16.
- 6 Firmin DN, Nayler GL, Klipstein RH, et al. In vivo validation of MR velocity imaging. *J Comput Assist Tomogr* 1987;11:751–6.
- 7 Hundley WG, Hillis LD, Hamilton CA, et al. Assessment of coronary arterial stenosis with phase-contrast magnetic resonance imaging measurements of coronary flow reserve. *Circulation* 2000;101:2375–81.
- 8 Silverman JM, Julien PJ, Herfkens RJ, et al. Quantitative pulmonary perfusion: MR imaging versus radionuclide lung scanning. *Radiology* 1993;189:699–701.
- 9 Kang IS, Redington AN, Leland N, et al. Differential regurgitation in branch pulmonary arteries after repair of tetralogy of Fallot: a phase contrast cine magnetic resonance study. *Circulation* 2003;107:2938–43.
- 10 Taylor AM, Bogaert J. Cardiovascular imaging planes and segmentation. In: Bogaert J, Dymarkowski S, Taylor AM, eds. *Clinical cardiac MRI*. Heidelberg: Springer, 2005:85–98.
- 11 Bland JM, Altman DG. Statistical methods for assessing agreement between two methods of clinical measurement. *Lancet* 1986;i:307–10.
- 12 Hernandez RJ. Magnetic resonance imaging of the mediastinal vessels. *Magn Reson Imaging Clin North Am* 2002;10:237–51.
- 13 Powell AJ, Chung T, Landzberg MJ, et al. Accuracy of MRI evaluation of pulmonary blood supply in patients with complex pulmonary stenosis or atresia. *Int J Card Imaging* 2000;16:169–74.
- 14 Vogt FM, Goyen M, Debatin JF. MR angiography of the chest. *Radiol Clin North Am* 2003;41:29–41.
- 15 Roman KS, Kellenberger CJ, Farooq S, et al. Comparative imaging of differential pulmonary blood flow in patients with congenital heart disease: magnetic resonance imaging versus lung perfusion scintigraphy. *Pediatr Radiol* 2005;35:295–301.

# IMAGES IN CARDIOLOGY

doi: 10.1136/hrt.2005.077180

## Ventricular systolic discordance in pericardial tamponade: acute reversal by pericardiocentesis

A 40 year old woman presented with a one week history of cough, chest pressure and myalgias. She had undergone chest radiation treatment for Hodgkin's disease 25 years previously. On examination, her heart rate was 104 beats/min, blood pressure was 93/67 mm Hg, and jugular venous pressure was >15 cm H<sub>2</sub>O. Kussmaul's sign was absent. Heart sounds were distant. Troponin I concentration was 17.3 ng/ml. ECG showed sinus tachycardia, low voltage, PR segment elevation in lead aV<sub>R</sub>, Q waves in leads V1–V2, and diffuse, non-specific ST segment abnormalities. There was a pulsus paradoxus of 15 mm Hg. Right atrial pressure was 14 mm Hg; the y descent was blunted. Right ventricular pressure was elevated throughout diastole. Pulmonary capillary wedge pressure was 16 mm Hg. Thermodilution cardiac index was 1.84 l/min/m<sup>2</sup>. Simultaneous biventricular pressure recordings demonstrated equalisation of diastolic pressures and respiratory discordance of systolic pressures (panel A), indicating ventricular interdependence. Transthoracic echocardiography revealed a large pericardial effusion with right atrial and ventricular inversion. Intrapericardial pressure was 14 mm Hg. After drainage of 200 ml of straw-coloured fluid from the pericardial space, pulsus paradoxus was absent. Simultaneous biventricular pressure recordings showed divergence of diastolic pressures and respiratory concordance of systolic pressures (panel B). The patient's symptoms resolved and she was discharged three days after pericardiocentesis.

Respiratory discordance of ventricular systolic pressures has been shown in humans with pericardial constriction and in animal models of pericardial tamponade. To our knowledge, this is the first demonstration of respiratory discordance of ventricular systolic pressures and its acute reversal in a human with pericardial tamponade.

A M Kim  
M A Fifer  
mfifer@partners.org

